

SOME BEES OF THE GENUS *ASHMEADIELLA*

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In the present paper I have considered two groups of *Ashmeadiella*: first, those with the margin of the clypeus of the female dentate or toothed; and second, those in which the body is black, but the legs at least partly red. The latter group is apparently confined to desert areas, and the species have more abundant pale pubescence than is found in most other forms. I also include descriptions of five new species not belonging to either of these groups.

I wish to thank Prof. T. D. A. Cockerell for the use of his collection and for many helpful suggestions.

*Ashmeadiella timberlakei* Michener, n. sp.

Female (type): Length 6 mm.; facial line distinctly longer than transfacial; inner orbits about parallel within, slightly divergent below upper margin of clypeus; lower margin of clypeus trilobed, the median lobe largest and notched in the middle; mandibles black, three toothed, the inner tooth broad with an oblique edge; antennæ black, the under side of flagellum more or less brownish; clypeus shiny with rather large punctures; rest of head and dorsum of thorax slightly shiny or dullish, with rather small close punctures, those of vertex about the same size as those of anterior part of scutum, but rest of scutum with somewhat larger punctures; pleura more shiny, with better separated punctures than those of dorsum of thorax; legs black, the hind femora and area on inner side of hind tibiæ red; tegulæ testaceous, or black in front; wings slightly gray; abdomen black, the sides of tergites one to five red, the red more and more restricted posteriorly, leaving anteriorly only a rather narrow black band which ends at the upper edge of the basal concavity of first tergite; punctures of dorsum of second and third tergites rather small, not dense, those of first tergite a little finer, those of last three tergites and sides of second and third somewhat larger and denser; pubescence dull white, abundant on sides of face, around antennæ, on cheeks, forming a narrow line above tegulæ and on posterior edge of scutum, not forming spots of hair at anterior edge of scutum, rather long on pleura (especially around edges) and on scutellum (especially posteriorly), and forming narrow bands on tergites one to five; apex of abdomen with some hair between the bands; scopa dull white.

Male: Length 5-5.5 mm.; similar to female but red of abdo-

men a little more extensive, at the sides reaching to the lateral teeth of apex of abdomen; clypeus normal, dullish, with rather small close punctures; apex of abdomen with four red teeth, the lateral ones very broad, the lateral edge of sixth tergite convex; median teeth about parallel sided, longer than basal width; mandibles with a faint red band near apex; face duller than vertex, the change occurring just below the level of anterior ocellus; pubescence sparser than in female; posterior margins of tergites reddish; black band up center of abdomen extending onto basal concavity.

*California*: Altadena (type locality), May 12 and 13, 1934, and June 1, 1935, one on *Lotus scoparius*; La Crescenta, May 5, 1934, on *Lotus scoparius*; Crystal Lake, San Gabriel Mountains, July 7, 1934, on *Verbena prostrata* (all Michener, Coll.).

The apical teeth of the male abdomen are sometimes evenly spaced, at other times the lateral spaces are much narrower than the median one. The lateral teeth appear wider than in the figure if the view is somewhat from the side.

The nearest relative of this species is *A. clypeodentata* Mich. These species differ in the form of the clypeus of the female, etc. The male *A. timberlakei* resembles *A. howardi* Ckll. in the broad lateral apical teeth of the abdomen, but *howardi* has the hind legs black, etc.

Named after Mr. P. H. Timberlake, in recognition of his extensive studies of California bees.

#### *Ashmeadiella clypeodentata* Michener, n. sp.

Female: Length 6 mm.; facial line hardly longer than transfacial; inner orbits about parallel, their lower parts a little divergent; lower margin of clypeus trilobed, but quite different from that of *A. timberlakei* (see figure); mandibles black; flagellum faintly brownish beneath; clypeus rather shiny, with moderate sized, not dense, punctures; rest of head and thorax slightly shiny, with rather small dense punctures, those of anterior part of scutum a little finer than those of rest of scutum; punctures of pleura not so dense as those of scutum; legs very dark brown, nearly black, the claw joints of tarsi faintly rufescent; tegulae dark reddish; wings clear; abdomen black, with rather small sparse punctures, coarser on center of second tergite than on third, finer and closer on first tergite, closer on apical tergites and sides of others; pubescence rather abundant, white, grayish on scutellum and around antennae, dense on sides of face, around antennae, and on cheeks; pubescence abundant but not so dense

on pleura (especially edges), on edges of clypeus, on scutellum, on edges of scutum, and on legs; no spots of pubescence on anterior part of scutum; abdominal bands rather narrow, the first widened at sides; last tergite with quite a little light hair; scopa nearly white.

Puerto Refugio, Angel de la Guarda Island, Gulf of California, May 1, 1921 (Van Duzee). This is the cotype of *A. crassa* Ckll., but the clypeal structure is so entirely different from that described for *crassa* that the two are certainly different species. Differs from *A. timberlakei* Mich. by lack of red, different clypeal structure, etc.

The type is in the collection of the California Academy of Sciences (C.A.S., Ent. No. 4164).

#### ASHMEADIELLA HÆMATOPODA Cockerell

Female: A large part of face covered with white pubescence; pleura covered with hair; band on first tergite widened at sides; fore femora entirely red; upper part of pleura red in one specimen; facial line hardly longer than transfacial; vertex dullish with rather small, close punctures, closer than those of scutum; clypeus truncate, as usual in the genus.

Male: Much like the female but punctation of vertex not quite so close, a little coarser than that of scutum; posterior margins of tergites reddish; pubescence more dense, entirely covering face and pleura and forming a broad band around scutum; teeth of abdomen usually red, the laterals slender and pointed, longer than basal width, the median ones long and parallel sided, more than twice as long as basal width.

Palm Springs, Riverside County, California, August 29, 1934, on *Petalonyx thurberi* (Michener, Coll.).

The females apparently have more red on fore legs and more hair on face than the type (which I have not seen). This may indicate a distinct species or subspecies.

This species is variable in size. One female is hardly 5 mm. long, while all the others are between 6.5 and 7 mm. Males are a little over 5 mm., a little over 6 mm., or about 7 mm. in length.

#### ASHMEADIELLA BIGELOVIÆ (Cockerell)

*A. rufipes* Titus is probably a synonym. The fore legs of the female vary from black to largely reddish in specimens from the same locality, so this cannot be a specific character. *A.*

*rufipes* is larger, but this is a variable character (see notes under *A. hæmatopoda*). It is possible that *rufipes* is distinct, but I am certain that my California specimens are the same as the New Mexico ones.

Female: Length 6 mm.; facial line a little longer than transfacial; eyes only slightly converging below; clypeus coarsely and closely punctate, shiny, the apex truncate; vertex and scutum shiny, with rather large, fairly dense punctures; apical tergite thinly covered with white pubescence.

Male: Length nearly 5 to nearly 6 mm.; facial line a little longer than transfacial; face covered with white pubescence; vertex and scutum shiny, with moderate sized or rather large well separated punctures; tegulæ reddish or nearly black; wings clear; abdomen with moderate sized well separated punctures on first few segments, those of posterior segments a little closer; median teeth of apex of abdomen translucent, about one and one-half times as long as wide; lateral teeth shorter and rather slender and pointed.

*California*: Palm Springs, Riverside County, August 28, 1934, on *Petalonyx thurberi* (Michener, Coll.); Hodge, Mojave Desert, September 14, 1935, on *Cleomella obtusifolia* (Michener, Coll.); Victorville, September 14, 1935, on *Cleomella obtusifolia* (Michener, Coll.); Helendale, Mojave Desert, September 14, 1935, on *Cleomella obtusifolia* (Michener, Coll.).

*Arizona*: Florence Junction, June 15, 1934 (M. & H. James).

I have also seen one of the original New Mexico specimens.

#### *Ashmeadiella rhodopus* Michener, n. sp.

Male (type): Length nearly 6 mm.; facial line slightly shorter than transfacial; face entirely covered with white hairs; antennæ nearly black; mandibles black with a broad red band before apex; vertex and scutum shiny with moderate sized, not very dense, punctures; tegulæ testaceous; wings clear; legs as in *A. bigeloviæ*; abdomen similar to that of *bigeloviæ* but punctures much finer; extreme sides of first tergite red; pubescence a little more abundant than in *bigeloviæ*; lateral teeth of apex of abdomen red, a little longer than basal width; median teeth about parallel sided, not twice as long as basal width.

Female: Length 6.5 mm.; similar to male but clypeus not covered with pubescence, its punctures moderate sized and elongate; sides of first tergite not reddish; anterior margin of scutum with a pair of hair spots. (In the male these are connected by a broad band of pubescence, so that they do not show as spots.)

Monserrate Island, Gulf of California (type locality), June 13, 1921 (Van Duzee); Angeles Bay, Gulf of California, June 17, 1921 (Van Duzee).

This is the *A. rufipes* of Cockerell, 1924. Probably other locality records for *rufipes*, given in the same paper, really refer to *rhodopus*. *A. rhodopus* differs from *A. bigeloviæ* by the longer teeth of the male abdomen, and the finer punctation, the clypeus of the female being dull and finely punctate, compared with the coarsely punctate clypeus of *bigeloviæ*. I have not seen specimens in which the fore legs are black as in some *A. bigeloviæ*.

The type is in the collection of the California Academy of Sciences. (C.A.S., Ent. No. 4165).

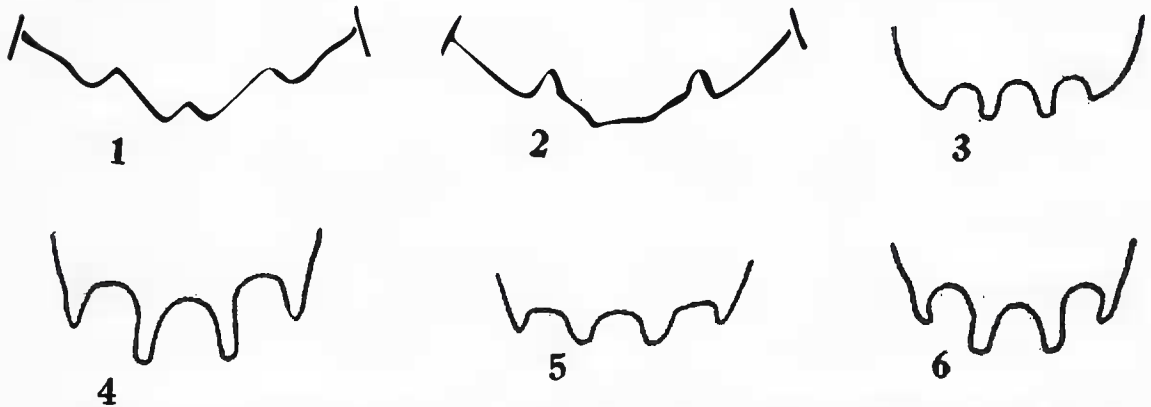


Fig. 1, anterior margin of clypeus of *Ashmeadiella timberlakei* Mich., ♀; fig. 2, same of *A. clypeodentata* Mich., ♀; fig. 3, Apex of abdomen of *A. timberlakei* Mich., ♂; fig. 4, same of *A. hæmatopoda* Ckll., ♂; fig. 5, same of *A. bigeloviæ* (Ckll.), ♂; fig. 6, same of *A. rhodopus* Mich., ♂.

#### *Ashmeadiella lateralis* Michener, n. sp.

Male: Length 5.5 mm.; quite similar to *A. timberlakei* Mich., but punctation of face a little coarser and not showing a distinct sudden change to the coarser punctation of vertex; face wider, the facial line slightly shorter than transfacial; scutum not so finely punctate anteriorly; red markings all dark red, not bright as in *A. timberlakei*; hind femora red, and apices of middle femora red beneath; red of abdomen restricted, not extending onto sixth segment, and gradually shading into the black; teeth of apex of abdomen black, or the laterals faintly reddish, the median ones broader at bases, more pointed at tips, more triangular, than in *A. timberlakei*; front of scutum with two small hair spots.

Holotype: Eagle Rock Hills, Los Angeles County, California, April 14, 1933, on *Rhamnus crocea* (Michener, Coll.).

Differs from *A. howardi* Ckll. by the color of the red markings, the shape of the median apical teeth of the abdomen, etc.

*Ashmeadiella maxima* Michener, n. sp.

Female: Length 8 to 9 mm.; very robust species; facial line considerably shorter than transfacial; eyes converging below; clypeus truncate at apex as usual in this genus; mandibles and antennæ black; vertex and scutum rather finely punctate, the vertex a very little more closely so than scutum, the latter not closely punctate, especially in center; clypeus closely punctate, the punctures a little coarser than those of vertex; punctures of pleura closer than those of scutum but about the same size; tegulæ black or slightly brownish; legs black; wings very slightly grayish; abdomen rather finely and closely punctate, on dorsum more finely so than on scutum; the first tergite not appreciably more finely punctate than second and third, the third shinier and more coarsely punctate than second; laterally and to some extent posteriorly the punctures are coarser than on dorsum of first few tergites; pubescence quite abundant, dull white, covering face nearly to ocelli (that of clypeus dull in most lights and not obscuring surface), abundant on cheeks, pleura (especially around edges), scutellum (especially posteriorly), anterior margin of scutum, and sides of scutum above tegulæ; anterior margin of scutum with two small spots of hair; abdominal bands conspicuous, white, that of first segment widened at sides; clypeus with brushes of orange hair below the margin; ventral scopa pale yellowish white.

Male: Length nearly 7 mm.; similar to female; face densely covered with white pubescence; transfacial line not so much longer than facial; abdomen nearly as coarsely and closely punctate as the scutum, the first tergite a little more finely punctate than second, the third more shiny and more coarsely punctate than second; teeth at apex of abdomen black, the laterals rather broad, the median ones a little longer, narrowed apically but not pointed, somewhat widened at base; claw joints of tarsi slightly rufescent.

Holotype female and a paratype of each sex: Devils River, Texas, May 6 and 7, 1907, on *Marilaunidium organifolium* and *Gaillardia pulchella* (F. C. Bishopp, Coll.).

The holotype is in Prof. T. D. A. Cockrell's collection.

The apex of the male abdomen is much like that of *A. californica* (Ashm.) but the median apical teeth are a little shorter. The large size and broad face of the female are very distinctive. The closest relative is *A. submaxima* Mich. (to be described else-

where) which has the punctation of the vertex (male) coarser than that of the scutum.

*Ashmeadiella cockerelli* Michener, n. sp.

Male: Length nearly 5 mm.; form robust; eyes slightly convergent below except for their lower ends; antennæ black, the flagellum very faintly dusky brown beneath; mandibles with a faint subapical red band; face dull, finely and closely punctate, especially at anterior margin of clypeus; vertex rather shiny, more coarsely but quite closely punctate; scutum anteriorly very finely and closely punctate, medially and posteriorly a very little more finely punctate than vertex; abdomen finely but not very sparsely punctate, the punctures considerably finer than those of vertex; apical teeth of abdomen black, short, the median ones much broadened at base and triangular; tegulæ black, their outer margins dark testaceous; legs black, the claw joints of tarsi dull brown; wings slightly dusky; pubescence dull white, not very abundant, present on sides of face, anterior margin of clypeus, pronotum, front and sides of scutum, scutellum, and pleura, but nowhere except on sides of face and margin of clypeus dense enough to obscure surface; abdomen with inconspicuous hair bands, and some hair between bands apically; hair on under sides of tarsi reddish.

Holotype: Altadena, California, May 12, 1935 (Michener), in Michener Collection.

Distinguished from all other known species except *A. timberlakei* Mich. by the very finely punctate anterior third or fourth of scutum, contrasting with the vertex and rest of scutum. *A. timberlakei* is a species with red markings and broad lateral apical abdominal teeth. *A. aridula* is a much more coarsely punctate species.

*Ashmeadiella florissantensis* Michener, n. sp.

Male: Length 5.5 to 6 mm.; facial line about equal to transfacial; inner orbits slightly convergent below; mandibles black; antennæ black, the under side of the flagellum obscurely dusky; head somewhat shining, with rather small close punctures; most of punctures of scutum larger and better separated, the scutum strongly shining; legs black, the claw joints of tarsi rufescent; wings slightly grayish; punctures of abdomen fine, even finer than those of head, especially fine but not very sparse on dorsum of first two or three tergites, closer and a little coarser posteriorly and laterally, where the punctures are like those of pleura and cheeks, but finer than those of vertex; apex of abdomen with the usual four teeth, the lateral ones rather broad, the median about

twice as long as basal width, slender; pubescence rather sparse, abundant and covering the surface on sides of face and anterior margin of clypeus, copious but not covering the surface around bases of antennæ, on cheeks, edges of pleura and sides of scutum; posterior edge of scutellum with a fringe of very long hairs; abdominal bands narrow, not very conspicuous; pubescence dull white slightly ochraceous on scutellum and around bases of antennæ.

Female: Length nearly 6 mm.; facial line a little longer than transfacial; eyes nearly parallel within; clypeus with rather large, not very close, punctures, its apex truncate as usual in this genus; vertex and scutum shining with moderate sized, not very close, punctures, those of vertex a very little finer than those of scutum; punctures in front of ocelli finer than those behind them; punctures of abdomen finer than in the male, exceedingly fine and rather sparse on dorsum of first three tergites, a little coarser on third than on second; pubescence similar to that of male but a little more abundant, that of dorsum of thorax faintly yellowish or ochraceous; clypeus and apex of abdomen with some very faintly ochraceous hair; scopa yellowish white.

Holotype male and paratypes: Florissant, Colorado, June 1 to 23, one on *Potentilla* and one on *Senecio* (Rohwer). (These have been recorded as *A. cactorum* (Ckll.). Paratypes: Meeker, Colorado, about 40° 2'N., 107° 55'W., 6200 feet elevation, July 20-21, 1919 (F4391B); South Fork, Colorado, June 17, 1919, about 37° 40'N, 106° 38' W., 8200 feet elevation (F4356); Ouray, Colorado, July 11-14, 1919, about 38° 1'N., 107° 40'W., 8500 feet elevation (F4378D).

The type is in Prof. T. D. A. Cockrell's Collection.

This species is similar to *A. coloradensis* Ckll., especially in the female, but the male has much longer median apical teeth and the female is more robust, with a larger head than *A. coloradensis*. This species is also similar to *A. californica* (Ashm.), but is usually smaller, with a more coarsely and sparsely punctate clypeus in the female, etc.

#### *Ashmeadiella altadenæ* Michener, n. sp.

Male: Length nearly 5 mm.; somewhat similar to *A. aridula* Ckll. but pubescence more abundant and browner, mandibles with their middle halves reddish; tegulæ dark brown; under side of flagellum brown; pubescence, in addition to covering scutellum and forming a margin around scutum, forms four short longitudinal lines on anterior part of scutum; pleura and cheeks quite densely covered with pubescence; tarsi brown; body more finely punctate



than in *aridula*, the vertex and scutum with rather small punctures, those of vertex close, those of scutum sparser, the scutum appearing shinier than the vertex; first few tergites with both basal and apical hair bands; apex of abdomen with the lateral teeth slender and pointed, the median ones rather long, parallel sided, subtruncate at apices, about one and one-half times as long as basal width or a little longer; second abscissa of cubital vein shorter than usual in the genus; abdomen finely and not very sparsely punctate, more finely so than vertex and scutum.

Holotype: Altadena, California, May 12, 1934 (Michener), in Michener Collection.

Differs from *A. californica* (Ashm.) by smaller size, more finely punctate vertex and scutum, broader median apical teeth of abdomen, and broader, though pointed, stipites. No other known species has the median apical teeth of the abdomen as in this one.

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#### BOOK NOTICE

Musgrave, Anthony. *Bibliography of Australian Entomology 1775-1930 with bibliographical notes on authors and collectors.* Royal Zoological Society of New South Wales. 380 pages. Sept. 1932.

To the American worker in most fields of Entomology the insect fauna of Australia is exceedingly remote and yet this bibliography contains much of interest to any entomologist. The literature of Australian Entomology is scattered in many publications that have appeared in Europe and the United States as well as in Australia and in its preparation almost every distinguished entomologist since the time of Linnæus has participated. Consequently the biographical notes in this compilation include almost a roster of the more active systematic entomologists of Europe and America. The historical notes on early voyages and explorations are of value to anyone interested in the history of scientific exploration.

The volume is an exceedingly important addition to our bibliographic lists. The form in which it is presented is excellent and the proof reading has evidently been most carefully done. Its author has accomplished what must have been an extremely laborious task in most excellent fashion.—G. F. Ferris.